8. ADMINISTRATION/ IMPLEMENTATION OF THE MONITORING PROGRAM

This chapter includes information on the administrative structure of the Greater Yellowstone Network, including staffing, operations and integration with other programs.

ADMINISTRATION

Governing Structure

The governing structure of the network includes a Board of Directors and a Technical Committee made up of National Park Service representatives. Program administration is governed by the Service-wide I&M program, which provides monitoring program goals and overall planning guidance.

1. BOARD OF DIRECTORS

Overall direction for the GRYN is provided by a Board of Directors (BOD), which consists of the superintendent (or superintendent's designee) of Grand Teton and Yellowstone National Parks and Bighorn Canyon National Recreation Area and the Intermountain Regional I&M coordinator. The major responsibilities of the BOD include promoting accountability and reviewing, and approving annual accomplishments, work plans and budgets.

2. GRYN CHARTER

The GRYN charter—approved by the BOD in August 2003—describes the basic practices used to plan, organize, manage, evaluate and modify the efforts of the GRYN. The charter also explains the roles and functions of the BOD and Technical Committee and establishes a Science Committee for help and guidance during the three phase planning period. The network charter is located in Appendix X.

3. PERIODIC REVIEW

A schedule for periodic review of the monitoring program will be added to the network charter to encourage continuous improvement and allow for modification of the program. Reviews will focus on implementation of the program and the effectiveness in achieving programmatic goals (as well as specific monitoring objectives) and will serve as a way to determine if the program is meeting the needs of the network parks.

TABLE 8.1 The GRYN will undergo several types of periodic reviews to ensure accountability and continuous improvement in the program.

Category of Review	Schedule/ interval between reviews	Principle reviewers
Annual data summaries	Annual and when sampling frame is complete	Project manager; program staff
Evaluate progress and results in order to inform work plans and protocols.		
Evaluate QC/QA and data stewardship practices to ensure data quality.		
Protocol review	At the completion of sampling frame	Staff ecologist; Science advisors
Has the targeted population/strata been adequately presented in the sample?		
Program review	Five-year interval	Board of Directors
Are monitoring protocols meeting park information needs and I&M standards for scientific defensibility?		

Administrative Structure

1. ADMINISTRATIVE SUPPORT

The network receives the majority of its administrative support from the Intermountain Region (IMR) in Lakewood, Colorado. This support includes personnel functions such as: 1) position classification, recruitment, human resources and development; 2) budget and contracting obligations through cooperative agreements, interagency agreements and contracts; and 3) property management and inventory. This arrangement is made possible through a one-year service agreement between the IMR and the participating networks (GRYN and Rocky Mountain Network), and involves a shared administrative assistant (duty stationed in Lakewood) who is supervised by the regional I&M coordinator. The assistant handles time and attendance (payroll input), requests for personnel actions, travel authorizations and vouchers, small purchasing, budget tracking and expenditure transfers.

2. SUPERVISION

The program manager is supervised by the IMR inventory and monitoring program coordinator. The program manager supervises permanent and temporary NPS employees.

3. OFFICE LOCATION

The Greater Yellowstone Network is currently located on the campus of Montana State University (MSU) in Bozeman, Montana.

STAFFING

Core Network Staff

Three staff members make up the "core staff" of the GRYN, including the program manager, data manager and ecologist. These three hold responsibility for vital signs planning and, together with affiliate park staff and cooperators, will implement the program. During the three-phase planning, Big Sky Institute augmented core staff with a research associate and project coordinator. Core staff members are duty stationed at network headquarters in Bozeman, Montana.

Flexible Staffing Plan

Staff needs during implementation will be driven by the overall monitoring design and resultant technical needs. The roles, responsibilities and duty stations of staff, particularly field sampling crews, will depend on the requirements described in the monitoring protocols that are under development (see Appendix VI - Protocol Development Summaries). For this reason, the GRYN requires a flexible pool of capable individuals to initially implement monitoring protocols, conduct pilot studies, perform data management projects and assist in the analysis and reporting of monitoring data. Options include: hiring NPS personnel; hiring CESU cooperators (normally through universities); creating interagency agreements; and hiring government contractors.

At the same time, experience demonstrates that having a professional NPS staff bridge the planning and implementation process fa-

TABLE 8.1 Duties of core network staff.

Core Staff	Role & Responsibility
Program Manager	The program manager is responsible for the overall management and supervision of the program. The program manager carries out these duties by developing work plans and schedules, scopes of work and coordinating network activities with the Technical Committee. The program manager coordinates with similar programs on adjacent lands and appropriate regional and national monitoring programs. The program manger also serves as staff to the Board of Directors and the Technical Committee.
Data Manager	The data manager is responsible for the information and data stewardship of the program. The data manager performs the following duties: designs, develops and manages complex database systems for the long-term maintenance, analysis and dissemination of natural resource data sets; and management of the GIS and database management software, GPS data dictionaries and spatial data inventories.
Ecologist	The ecologist is responsible for the scientific and statistical components of the program. The ecologist designs, develops and tests long-term monitoring protocols, as well as directing data collection procedures and conducting analysis of data. The ecologist also reports the significance of findings to park managers and interested public.

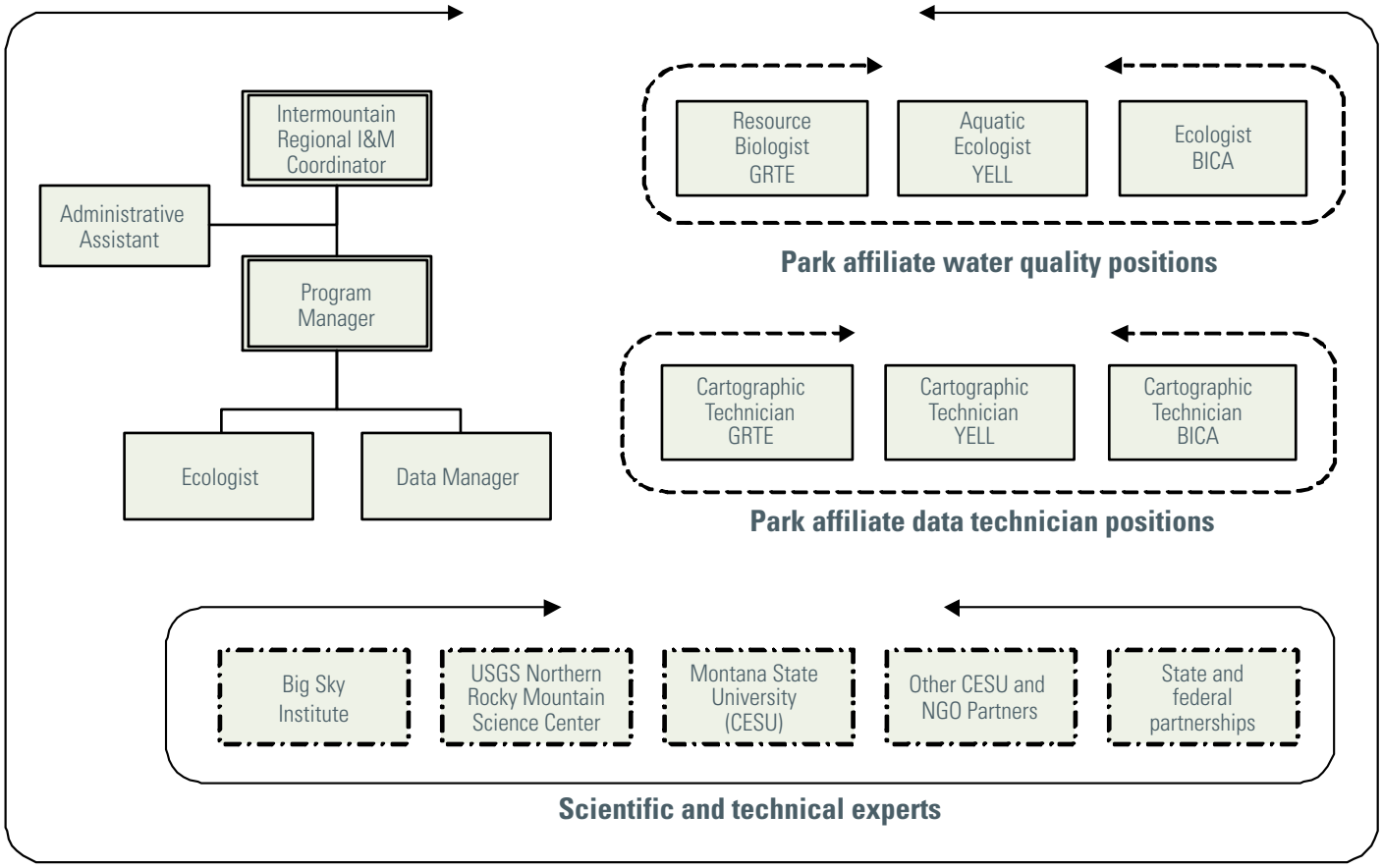

FIGURE 8.1 Staff organizational chart showing core and affiliated staff positions.

cilitates working with network parks and will ensure stronger, more relevant products emerging from these cooperative relationships. To increase overall effectiveness, the GRYN may hire staff members who are duty stationed in network parks or rely on existing park natural resource staff for part of the monitoring. A core staff, along with affiliated park staff can provide the continuity among program staff and a programmatic history essential to the success of a long-term monitoring program.

Decisions to identify affiliated park positions such as project leaders and/or crew members will only be exercised when the following requirements can be met: 1) capable staff already exist at the park and are available to conduct monitoring; 2) the park can provide work space; and 3) there are mechanisms in place to assure the work is completed following the guidelines in the monitoring protocol and the schedule established in the annual work plan. One example where GRYN is working with affiliated park staff is in the integrated and regulatory water quality monitoring program.

Critical results

Once staffing needs have been filled and individuals are assigned to monitoring projects, it is important that the employee has a clear understanding of his/her roles and responsibilities. Managing individual performance and seeing that the employees carry out their assigned duties according to established protocols is the responsibility of the supervisor. Communication is especially important when a park employee is assigned to the responsibility of collecting data for the network. In these instances, it is essential that the primary supervisor interact with the network program manager to develop and evaluate employee performance, as established in the annual employee performance plan.

OPERATIONS

Safety

Safety of field personnel is the first concern in conducting a monitoring program. Numerous safety issues and concerns arise as field personnel come in direct and indirect contact with waterborne pathogens,

chemicals and potentially hazardous plants and animals. Weather conditions can be extreme. Field work requires an awareness of potential hazards and knowledge of basic safety procedures. Network safety procedures (Safety and Health Standard Operating Procedure) provide for safety checklists and employees are referred to Chapter A9 of the USGS National Field Manual (NFM) for the complete recommended safety procedures. In addition, employees are instructed to contact local park safety officers for information regarding local problems or issues such as bear or fire closures or avalanche hazards.

Training

Well-trained employees who repeat the monitoring protocol year after year provide for continuity and a successful quality assurance program. The development of standard operating procedures (SOP) alone does not guarantee that high-quality data will be collected. A training program will assist field and laboratory staff in obtaining a clearer understanding of data collection procedures described in the SOPs and should be held prior to the initiation of routine data collection and include a trainee certification process. Core network staff will see that employees engaged in monitoring have adequate skills and experience to conduct monitoring.

Equipment

The network will normally supply the equipment and supplies necessary to conduct monitoring. Property and equipment will be managed according to Directors Order #44: Property Management. Sensitive property (cameras, computers, etc.) and property sensitive to theft, loss or damage (GPS units, radios, binoculars) will be managed as accountable property and furnished according to need using form DI-105: Receipt of Property. The purchases of equipment likely to depreciate will be scheduled over time to reduce the impact of replacing substantial amounts of equipment in any given year. Calibration of equipment will follow manufacture directions and will be included as part of an appendix to the monitoring protocol. Vehicles will normally be leased through General Services Administration (GSA), although the network has purchased one multi-passenger vehicle that is available for use.

Laboratory Space

There is an anticipated need for laboratory operations for the water quality monitoring program. The Yellowstone Center for Resources – Aquatic Resource Division has an aquatic lab in operation during the summer at Lake. This lab is equipped with a muffle furnace, gravity flow Isotemp drying oven, analytical balance, and a Millipore water purification system and has the capacity to prepare samples for storage and transport, sort macroinvertebrate samples to identify and count New Zealand mudsnails, and oven dry and weigh samples to calculate total suspended sediments. Samples collected for water chemistry, nutrients and/or metals will be shipped to a certified lab for analysis. GRTE and BICA each have the capacity for a wet lab where samples can be stored and packaged for transport to a lab for analysis.

INTEGRATION

Following is a hypothetical example of how the I&M program might integrate with ongoing monitoring for fire in the parks to develop a highly informative, cost-effective program based on Key and Bennetts (2004). Integration of monitoring programs within and among agencies can be a long and arduous process due to a variety of extenuating circumstances, such as different objectives, dissimilar levels of funding and/or different funding sources and disagreement as to the best way to integrate. Yet, a lack of integration can lead to wasting resources and duplicating effort. Therefore, while the GRYN realizes the possible difficulties of partnering with other agencies, it is essential to the monitoring effort to share information and resources to produce the most informative monitoring data available in the GRYN parks. Thus, while the GRYN has already begun to create partnerships with other agencies, it is also necessary to identify an overall plan for integration, particularly in areas where the potential is obvious, such as with fire, invasive plants and water quality. Following is an example of how the I&M program may integrate with ongoing monitoring for fire in the parks to develop a highly informative, cost-effective program.

Fire management in the national parks consists of a fairly developed program concentrated on fuels reduction, fire behavior and threats to human life and property. Thus, while the fire management program is always in place, the focus of its resources is centered upon an actual fire event, instead of the long-term pre-burn and post-burn ecology of the area. Conversely, the I&M program focuses on long-term ecological monitoring, which could include post-burn effects of fire on the ecology of the system, including both vegetative and animal communities. Furthermore, the fire management program also promotes the use of fire for restoration of communities. While their objectives (i.e., reduction of shrub cover by 50%) may have a different focus than I&M objectives (i.e., improvement of wildlife habitat for pronghorn), many times the objectives can be comple-

mentary. In addition, the fire management program may have used the objective of the I&M program as the impetus for performing a prescribed burn. Thus, integration between the groups could lead to increased efficiency and knowledge. This example illustrates the ability of the programs to integrate on prescribed burn issues; however, it is also important to integrate on post-burn monitoring. While the fire management program may receive most of it's funding to prevent and fight fires, the I&M program's focus will be on the long-term, or "second-order", effects of fire on an ecosystem. These long-term effects may include landscape recovery, seed bank availability, erosion potential, etc.

While these illustrations are cursory, it is important to note that integration among agencies is essential to a successful monitoring program, as resources are always limited. These methods of integration can be applied to other programs, such as invasive species and water quality.

Partner agencies and organizations

1. GREATER YELLOWSTONE COORDINATING COMMITTEE

The Greater Yellowstone Coordinating Committee (GYCC) was developed in 1964 when the National Park Service and the U.S. Forest Service signed a formal Memorandum of Understanding (MOU) that provided for mutual cooperation and coordination in the management of core federal lands in the GYE. Revised in 1986, the committee includes the following participants: park superintendents from Grand Teton and Yellowstone National Parks; the regional director of the NPS Intermountain Region; the regional forester of the USFS Rocky Mountain Region; forest supervisors from six national forests; and refuge managers from two wildlife refuges within the GYE. The role of the GYCC is to provide leadership, guidance and coordination among the national parks, national forests and national wildlife refuges. The GYCC has established several priority areas that overlap with the vital signs selected for the network. These include land patterns, GYE waterways invasive species management and whitebark pine management (Greater Yellowstone Coordinating Committee 2004).

Various subcommittees carry out the on-going coordination within the GYCC. The Northern Yellowstone Cooperative Wildlife Working Group, which includes biologists from Yellowstone NP, Gallatin NF, USGS and Montana Fish Wildlife and Parks, coordinates and standardizes survey methodology, timing and reporting and also identify research priorities for antelope, mountain goats, bighorn sheep, mule deer and elk using the Northern Range (Greater Yellowstone Coordinating Committee 2005).

2. ROCKY MOUNTAINS COOPERATIVE ECOSYSTEM STUDIES UNIT

The Rocky Mountains Cooperative Ecosystem Studies Unit (RM-CESU) is a National Park Service program whose mission is to "improve the scientific base for managing ecosystems in the rapidly changing social, cultural and environmental landscape in the Rocky Mountain Region…" (RM-CESU 2004). Through the CESU, the network can gain access to university and nonprofit members for technical assistance needed to develop and implement the monitoring program. Appendix IX shows a list of past and present CESU cooperators involved in helping the network design the monitoring program.

3. BIG SKY INSTITUTE AT MONTANA STATE UNIVERSITY

The Big Sky Institute for Science and Natural History (BSI) was established in 1999 to "increase the understanding, knowledge and appreciation of the natural and cultural environment by linking education and interpretive programs related to natural ecosystems and the human communities that depend on them " (Big Sky Institute 2004). BSI plays an important role in day-to-day operations of the network by providing guidance as well as professional staff and students instrumental in planning and preparing monitoring protocols.

4. UNIVERSITY OF WYOMING— NATIONAL PARK SERVICE RESEARCH CENTER

The University of Wyoming – National Park Service (UW-NPS) Research Center is a cooperative effort between the University of Wyoming and the National Park Service to "provide excellence in research by furnishing housing, laboratory space, transportation, equipment and financial support to enable investigators in the biological, physical and social sciences access to the rich and diverse environments of Grand Teton and Yellowstone National Parks…" (University of Wyoming 2004). The research station is located at AMK Ranch in Grand Teton National Park and has furnished housing and laboratory space to university cooperators working with the network on biological inventories.

5. USGS NORTHERN ROCKY MOUNTAIN SCIENCE CENTER

The USGS Northern Rocky Mountain Science Center (NRMSC), based at Montana State University, conducts "research in support of natural resource management in the mountains and plains of Wyoming, Montana and Idaho" (USGS 2004). Examples of research that are relevant to GRYN vital signs monitoring include: the Interagency Grizzly Bear Study Team (IGBST), which conducts research on the status and trends of threatened grizzly bear populations and their food sources in the

GYE and the Amphibian Research and Monitoring Initiative, which conducts amphibian monitoring along the Rocky Mountain Transect (Rocky Mountain National Park to Glacier National Park). Additionally, the NRMSC is the regional node for the National Biological Information Infrastructure (NBII). This node will provide Internet access to existing and late-breaking information as well as educational and analytical tools needed to make effective use of the information.

6. NATIONAL FOREST INVENTORY AND ANALYSIS PROGRAM

The mission of the USDA Forest Service Forest Inventory and Analysis (FIA) program is to conduct and continuously update a comprehensive inventory and analysis of the present and prospective conditions of the renewable resources of the forest and rangelands of the United States. The FIA is the only program that provides consistent and credible annual data for all forest lands (public and private) within the United States. Public and privates lands in the GRYN are covered by the Interior West FIA (IW-FIA) unit, part of the Rocky Mountain Research Station (USDA 2005)

7. NATIONAL WEATHER SERVICE

The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. The NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community (NWS 2005).